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I.P.P.

Babcock & Wilcox

a McDermott company

Power Generation Group

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Barberton, OH 44203-0351
(216) 753-4511

October 24, 1991

Intermountain Power Project
Department of Water & Power
City of Los Angeles
P.O. Box 111, Room 658
Los Angeles, CA 90051

Attn: Mr. J.W. Scofield

Re: Intermountain Power Project
B&W Ref: RB-614/615
Subject: Burner Design Issues

Gentlemen:

Last Friday, 10/18/91, B&W received a fax from IPSC requesting design changes to the new burners for unit #1. A copy of this fax is attached. The requested changes have been reviewed with Messrs Smith, Cioffi, and Langley of B&W's Design Engineering and Service departments. In addition, on 10/23/91, Messrs Smith, Cioffi and Palmberg had a telephone conference with RJM (Richard Monro), IPSC's design advisor, to discuss these same concerns.

Before going into specific responses, it is appropriate to discuss the philosophy utilized by B&W in designing the segmented backplate for these new burners. The B&W concept employs a backplate with six interconnected segments that could be compared to a bracelet. The segmented ring will, in effect, act as a single ring with respect to expansion but is not subject to the thermal stresses of the old one-piece design. We purposely avoided utilizing fixed supports for each segment because of experience with the original IPP burners and the difficulty in accurately predicting relative thermal expansion between the inner air sleeve and the register assembly.

When setting up the referenced conference call, we discovered that RJM had not received B&W sketch SK-100291 which showed the B&W backplate design in significant detail. Pertinent sections of this sketch were faxed to RJM to assure that he had all of the information. Results of our telecon are included below along with B&W's response to IPSC's concerns:

1. Outer Register Backplate Assembly:

   a. B&W's design provides for 1/4" gap between the inner corner of each segment. This is based on an assumption that the outer diameter of each segment is 900F hotter than the inner diameter of each segment (e.g., outer 1700F; inner 800F). This is a much worse condition than is expected, thus the 1/4" gap should be more than sufficient. In addition, there is an additional 1/8" gap built into the hinge pins (see attachment A). RJM agreed with the magnitude of B&W's circumferential gap but suggested that B&W increase the 1/4" to 3/8" to account for unknowns and recheck the strength of the hinge pin. This will be done.

J. P. MUSTO	✓
C. E. FINNEGAN	✓
D. E. LEOPARDI	
K. E. SOUTH	
D. C. MURDOCK	
S. M. MATHIS	
D. A. PATTEE	
S. N. LOVELL	
M. ROYLANCE	
P. OMLOR	
C. WHITING	
D. WALKER	
FILE	0

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1. Outer Register Backplate Assembly (cont'd)

   b. In calculating backplate radial clearances, B&W used the conservative approach of assuming that the expanding component was at 1800F and that the interferring component did not move from its cold position. Thus the 1/2" gap at the inner annulus and the 5/8" gap at the outer annulus are very generous. RJM agreed that there was sufficient radial clearance in the B&W design.

   c. During our 10/23/91 telecon, RJM agreed to the use of B&W's design of interconnected backplate segments, in lieu of individual fixed supports for each backplate segment.

   d. During our 10/23/91 telecon, RJM agreed that B&W's method of independently supporting the register assembly and the inner air sleeve assembly is acceptable without "outer annulus radial supports" (ref. B&W preliminary drawing #439670E). At the same time, RJM will send B&W a sketch of some additional support ideas relative to backplate stability. B&W will review these and take appropriate action.

   e. With B&W's interconnected backplate segment design, the required gap between each segment is minimal. However, since we are increasing the gap to 3/8", see above, B&W will add lap plates to cover the gap between segments. RJM agreed with this approach and suggested that B&W check to see how much the gap changes when the assembly is hanging freely after the shipping restraints are removed. B&W will do so.

2. Throat Sleeve Assembly:

   a. B&W's throat sleeve is centered by three lugs positioned at 4:00, 8:00 and 12:00 respectively. RJM agreed with this design approach.

3. Scanner:

   a. B&W has added an additional observation port to the outer air zone which could easily be converted on-line to accept a second scanner. We located it in a spot which <u>may</u> allow straight on viewing (without mirrors) of both the lighter and coal burner flame. At the same time, we left the original scanner port in its old position. IPSC can experiment with relocation of the original lighter and/or addition of a second lighter at their convenience (or not at all, if they so desire). RJM indicated that they had no difficulty with this approach.

I trust that the above responses adequately address IPSC's concerns. We recommend that IPP proceed with the burner design offered by B&W. If you have any further questions, please advise.

Very truly yours,

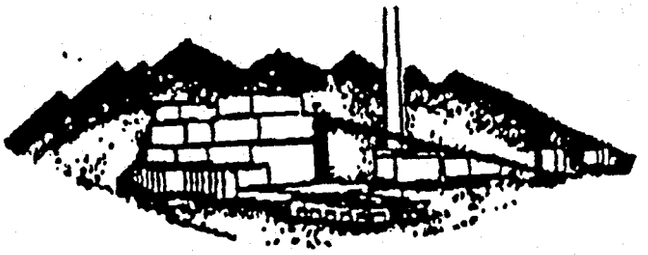
C.A. Palmberg
Project Manager

CAP009:nk

cc: R.K. Krikorian - IPP, LA
J.P. Musto - IPP, Delta
D.C. Langley - B&W, Denver
J.W. Smith - BVCB1G
P.L. Cioffi - BVNO1C
D.W. Fowler - IPP, LA
D.G. Adler - BVCB3A

Attachment A

JWS



INTERMOUNTAIN POWER SERVICE CORPORATION

CONFIRMATION: (801) 864-4414 EXT:6577

FACSIMILE: (801) 864-4970

FACSIMILE COVER SHEET

DATE: 10/10/91

TO: COMPANY NAME: B+W

ATTENTION: Don Langley

FACSIMILE #: 303 985 1842

FROM: Aaron Nissen EXT: 6482

DEPT: Technical Services

PAGES TO FOLLOW: _____

COMMENTS: Burner Design Comments

DATE & TIME SENT: _____

CONFIRMATION BY: _____

APPROVED BY: _____

10/18/91

Subject: Response to B&W's Modified Burner Design

The following are IPSC's comments on B&W's modified burner design proposed in the 10/15/91 meeting in Los Angeles. At this meeting B&W presented burner drawings and requested DWP approval by 10/18/91 to proceed with fabrication for the IGS Unit 1 burners.

It is difficult concur with any proposed burner design without adequate time and enough detail information on critical components of the burner. Particularly critical in this case is the information regarding design of the are the backplate assembly and throat sleeve casing seal assembly.

Prior to release for fabrication of the final burner design, IPSC requests the following recommendations be incorporated into B&W's design, the burner drawings be completed reflecting these modifications and these drawings be distributed for approval to fabricate.

Please note at this stage of the burner project, it is essential to get full acceptance of the finalized burner design including materials and detail clarification. We recommend taking the additional days necessary, prior to fabrication approvals.

The following is our list of burner design recommendations;

1. Outer Air Register Backplate Assembly:

   a. Circumferential Clearance between Segments- Total circumferential clearance should equal 3 inches. With six segments as B&W has recommended, the radial clearance between segments should be 0.5 inches. If this gap is triangular shaped, minimum clearance should remain 0.5 inches.

   b. Radial Clearance between Segments- Radial clearance on each of the backplate segments should be 0.25 at the inner annulus (ID) and 0.5 on the outer annulus (OD) for thermal growth allowances.

   c. Backplate Axial Support- Axial support needs to be provided to center each of the backplate segments to allow for the radial and axial clearances previously stated. RJM has recommended a shoulder bolt attachment arrangement (drawing enclosed) which we would like to see utilized unless a better attachment can be proposed.

d. Outer Annulus Radial Support- Additional radial supports should be provided to the outer annulus of the backplate assembly, beyond the support provided by the additional support rails proposed by B&W. We are recommending additional radial supports attached to the outer ring and anchored to the axial braces on the nozzles support sleeve (a minimum of four; one per each of the six backplate segments minus the two rail supports).

e. Segment Cover Plate- A slip fit cover plate is recommended to be attached to each segment joint to minimize air leakage.

2. Throat Sleeve Assembly:

a. Throat Sleeve Radial Supports- Radial supports need to be included on the throat sleeve assembly to ensure centering of this sleeve.

3. Scanner: Recommend the second scanner issue be placed on hold until after the return of Unit 2 from its Fall Outage.

Please note, RJM's final report is expected Monday 10/21/91 and will be forwarded to all parties at this time.

attachments
cc: Byron Fujikawa
Raffi Kirkorian
Don Langley
Richard Monroe

INTERMOUNTAIN POWER PROJECT
MODIFIED BACK PLATE

DESIGN

- FOUR 90° SEGMENTED PANELS.
- SLIP-FIT TO THE INNER SLEEVE AND OUTER REGISTER ASSEMBLY.
- TANGENTIAL 3/4 INCH GAP BETWEEN PANELS.
- OVERLAP PLATES BETWEEN PANELS.
- RADIAL CENTERING BARS.

ADVANTAGES

- ELIMINATION OF PLATE CONING/WARPING.
- THE GAPS ALLOW FOR 0.6 INCH THERMAL GROWTH AT THE INNER RADIUS.
- OVERLAP PLATES PREVENT AIR-FLOW THROUGH GAPS.
- RADIAL BARS TO CENTER PLATE DURING INSTALLATION AND TO PREVENT BINDING OF THE PLATE DURING THERMAL GROWTH.

MSP

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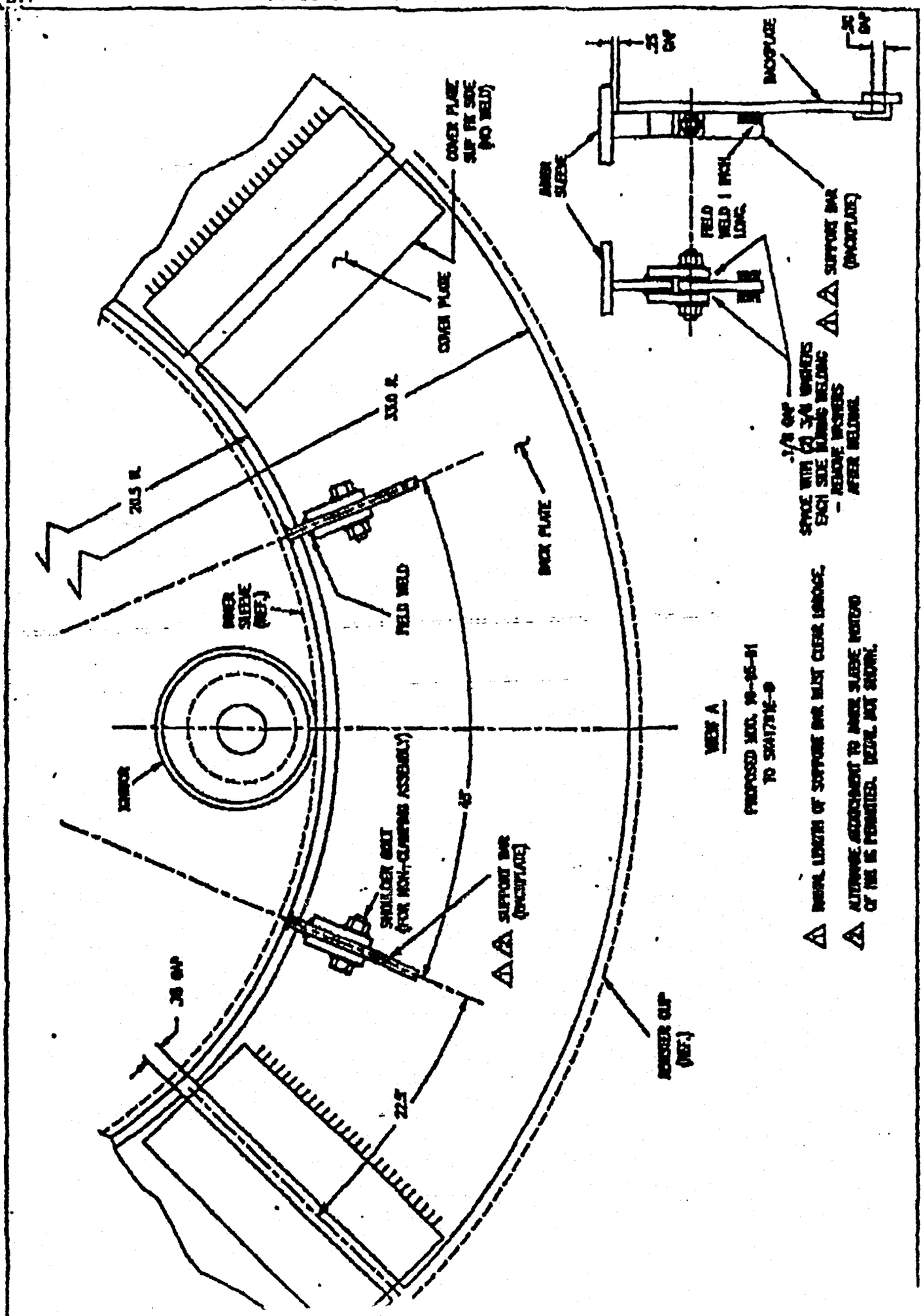
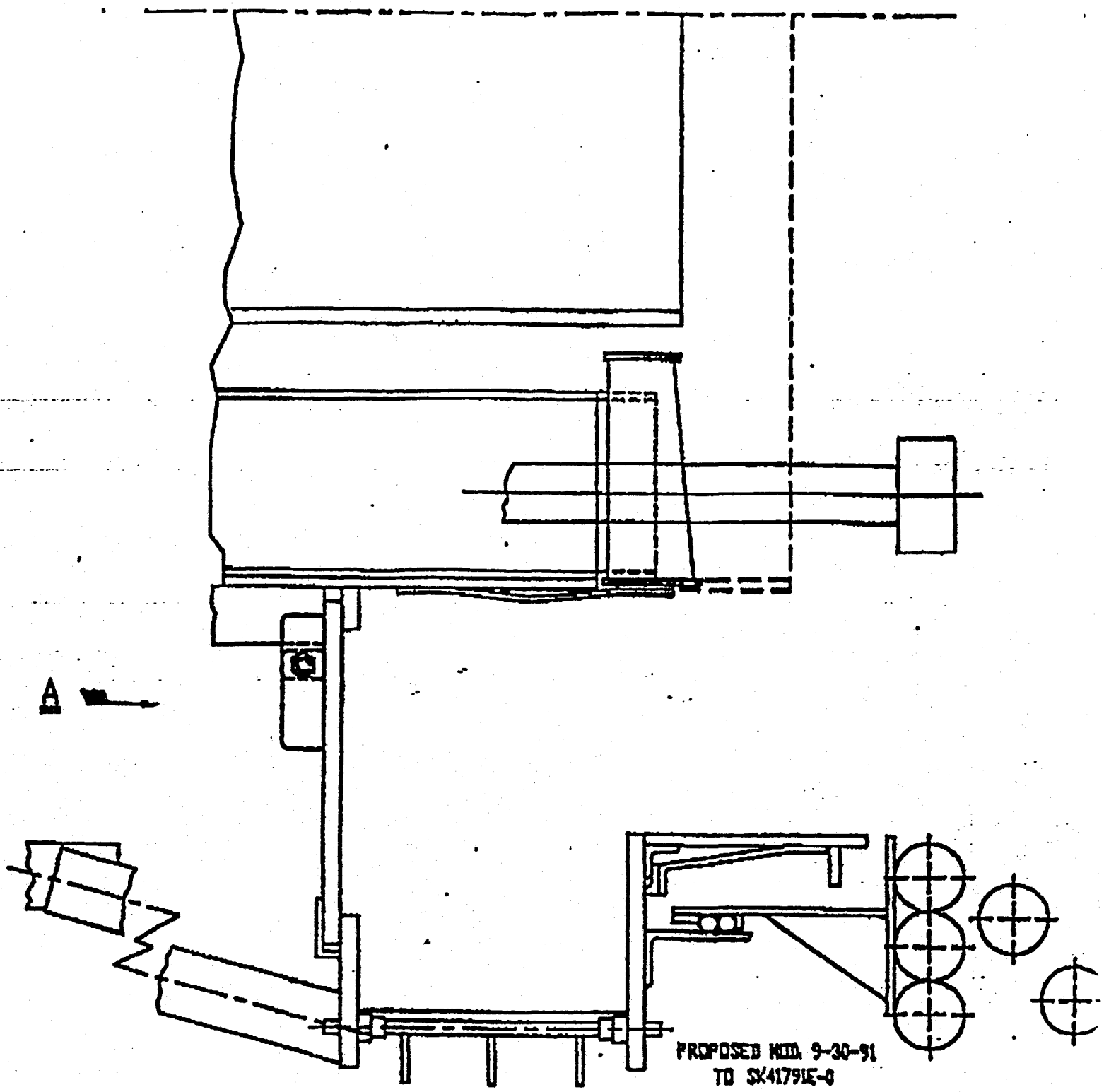


Figure 39 Segmented Back Plate

INTERMOUNTAIN POWER PROJECT

RECOMMENDED DESIGN



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